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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* YASUHARU YOSHIDA

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Appeal 2009-009124  
Application 09/921,714  
Technology Center 2600

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Decided: June 21, 2010

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Before JOHN C. MARTIN, MAHSHID D. SAADAT,  
and CARL W. WHITEHEAD, JR., *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of claims 1-13, which are all of the claims pending in this application. An oral hearing was conducted on this appeal on April 20, 2010. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

## STATEMENT OF THE CASE

Appellant's invention relates to a communication connection system for dedicated short range communications used in an intelligent transport system (ITS) for operating in coordination with a service requiring a high speed link connection in an on-vehicle equipment. The system is capable of receiving a plurality of services in zones where a plurality of services exist. (Spec. 1:6-10; 5:7-11.)

Claim 1, which is illustrative of the claimed invention, reads as follows:

1. An on-vehicle dedicated short range communication equipment comprising:

searching means for performing search for radio frequencies used by a roadside dedicated short range communication equipment with which the on-vehicle dedicated short range communication equipment is going to have a dedicated short range communication; and

establishing means for establishing a link for the dedicated short range communication with said roadside dedicated short range communication equipment at the searched for radio frequencies,

wherein said searching means performs the search by cyclically switching radio frequencies from one to another while keeping a first ratio that radio frequencies for a first type of communication are searched for larger than a second ratio that radio frequencies for a second type of communication are searched for, wherein the ratio for a first type communication is the scanning time spent searching for a first type of communication, divided by a total scan period, and the ratio for the second type of communication is the scanning time spent searching for a second type of communication divided by the total scan period.

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

Wiatrowski	US 5,806,002	Sep. 8, 1998
Ando	US 6,275,552 B1	Aug. 14, 2001
		(filed Feb. 5, 1998)

Claims 1-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of Wiatrowski.

We make reference to the Briefs (Appeal Brief filed January 30, 2007, and Reply Brief filed September 27, 2007) and the Answer (mailed July 27, 2007) for their respective details.<sup>1</sup> Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant did not make in the Briefs have not been considered and are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

## ISSUES

The pivotal issues before us are:

1. whether the Examiner erred in determining that combining Ando's roadside communication system with the frequency scanning method of Wiatrowski would have taught all the claimed elements, and
2. whether the combination would have been obvious to one of ordinary skill in the art.

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<sup>1</sup> The Examiner's communications mailed January 14, 2008 and May 22, 2008 have been vacated in a communication mailed March 3, 2009. Therefore, we need not consider Appellant's "Second Reply Brief" filed March 13, 2008, which was intended as a response to the Examiner's communication mailed January 14, 2008.

### FINDINGS OF FACT

The following findings of fact (FF) are relevant to the issue involved in the appeal.

#### *Ando*

1. Ando relates to on-board and road side communication equipments using a plurality of synchronizing signals, while having simplified circuits and smaller equipments. (Col. 2, ll. 48-57 and 60-67.)
2. Ando discloses using Dedicated Short-Range Communication (DSRC) protocol for interactive communications between the road side equipment (RSE) and the on-board equipment. An application for such protocol may be Electric Toll Collection (ETC), while the protocol may be applied to other applications such as Intelligent Transport System (ITS) or Commercial Vehicle Operation (CVO). (Col. 6, ll. 58-67.)

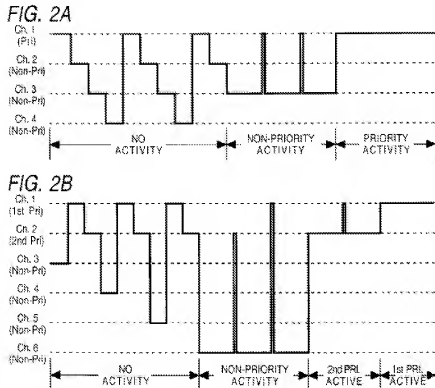
#### *Wiatrowski*

3. Wiatrowski discloses priority scanning of radio frequencies wherein the priority scan comprises automatically scanning, while the communication unit is unmuted to a non-priority communication resource having a first frequency, at least one priority communication resource having a second frequency. (Col. 2, ll. 36-44.)
4. Wiatrowski further discloses other embodiments of the priority scan wherein a non-priority communication resource having a first frequency and a priority communication resource having a second frequency are scanned. (Col. 2, ll. 50-60; col. 3, ll. 21-26 and 53-60.)
5. Figures 2A and 2B of Wiatrowski disclose the timing diagram for priority scanning wherein searching for radio frequencies are performed during the non-activity period by switching between different channels

including a priority channel and plural non-priority channels until activity is detected. (Col. 4, ll. 10-18 and 50-61.)

6. Wiatrowski defines the scanning intervals at 50 milliseconds of time. (Col. 4, ll. 31-35.)

7. Figures 2A and 2B of Wiatrowski are reproduced below:



Figures 2A and 2B depict timing diagrams of priority scanning with one priority channel and two priority channels, respectively. (Col. 4, ll. 10-17, 50-51.)

8. Wiatrowski further discloses a communication unit having multiple channels which may be tuned to the same or different receive or transmit frequencies. Additionally, different channels may be assigned the same frequencies, but their difference may be determined by the squelch rules or other attributes associated with those channels. (Col. 8, ll. 58-64.)

9. Wiatrowski further provides an exemplary table showing channel configurations including various factors for differentiating among channels and indicates that the table is merely illustrative, and not an exhaustive list of possible channel configurations. (Col. 8, l. 64 – col. 9, l. 30.)

10. As shown in Figure 5, Wiatrowski determines if the priority and non-priority channels have different frequencies, and if so, determines if the bandwidths of these channels are different. Wiatrowski allows for different bandwidths for different channels having different frequencies, that takes the process to step 507 where the digital intermediate frequency (IF) filter is programmed to the appropriate setting. (Figure 5; col. 11, ll. 7-26.)

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). Furthermore,

‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

*KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re*

*Kahn*, 441 F.3d at 987-88; *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

## ANALYSIS

### *Claims 1, 3, and 5-7*

Appellant does not challenge the Examiner's reliance on Ando for disclosing searching means for performing search for radio frequencies and establishing means for establishing a link for the dedicated short range communication with a roadside equipment. *See* FF 2. However, Appellant contends that one of ordinary skill in the art would not have combined Ando with Wiatrowski because the combination introduces needless complexity to the system of Ando, which is concerned with a simplified circuit and smaller size (App. Br. 14-17; Reply Br. 4-5). Appellant further asserts that Ando teaches away from the combination because Ando uses a time division multiple access communication method and is concerned with a less complex and smaller configuration, as recited in claim 1 (App. Br. 17-18).

Contrary to Appellant's contentions, the combination proposed by the Examiner is not based on the bodily incorporation of the priority scanning of Wiatrowski into the on-board and roadside communication equipment of Ando. While the system disclosed in Ando may be less complex without the priority scanning scheme of Wiatrowski, the added benefits of using different frequencies for different types of communications justify the potential increase in complexity. In other words, Ando's method of synchronizing signals may result in more simplified circuits (FF 1) but does not mean that added improvements in device performance cannot be considered merely because the size or complexity increases. As stated by



the Examiner (Ans. 8-9), evaluating whether to use these improvements involves trade-offs wherein one factor may be improved at the cost of worsening some other factors.

Additionally, we find that one of ordinary skill in the art would have recognized and appreciated that expanding the functionality of a dedicated short range communication equipment using the priority scanning of radio frequencies as taught by Wiatrowski would have served as an obvious enhancement to the road side equipment (RSE) of Ando. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting *KSR*, 550 U.S. at 416).

Appellant further asserts (App. Br. 18-19) that, even if the references may be combined, Figure 2A of Wiatrowski, relied on by the Examiner, merely shows the sequences of channels, and not the periodicity of the switching, as required by claim 1. The Examiner responds (Ans. 10) relying on the description of Figure 2A of Wiatrowski and asserting that the scanning intervals for priority scanning and non-priority scanning indicate the scanning time ratios recited in the claims. Specifically, the Examiner finds that Figure 2A shows that priority scanning has a duty cycle of 0.25 and non-priority scanning has a duty cycle of 0.75 (*id.*). We note that these assertions regarding Figure 2A remain unchallenged by any arguments about claim 1 in Appellant’s Reply Brief. The Examiner further states (*id.*) that the channels shown in Figure 2A of Wiatrowski meet the claimed radio frequencies for first and second types of communication because they have different frequencies and different priorities.

After reviewing the disclosure of Wiatrowski and Appellant's arguments, we agree with the Examiner that Wiatrowski uses different frequencies for scanning the priority and non-priority communication resources (FF 3-4). As shown in Figures 2A and 2B, priority scanning includes a "no activity" time interval during which the scanning unit switches between priority channel(s) and non-priority channels (FF 5-7). Therefore, the ratio of the time during which radio frequencies for priority channels (i.e., one type of communication) are searched relative to the total search time is different from the ratio for searching radio frequencies for non-priority channels (i.e., another type of communication), as recited in claim 1. Because claim 1 requires that scanning for the recited "first type of communication" has a larger ratio than scanning for the recited "second type of communication, the first and second types of communications read on the non-priority channels and priority channels, respectively, in Figure 2A.

Additionally, we find that Wiatrowski scans these resources by switching between channels that are tuned to different frequencies (FF 3 and 8). Wiatrowski specifically distinguishes between the priority and non-priority resources by disclosing that each type is scanned at a different frequency (FF 4). Furthermore, the disclosed embodiments in Figures 2A and 2B refer to scanning different channels (FF 5-7) for different types of communication. However, while Wiatrowski allows for differentiating among the scanned channels based on other factors listed in the table of Column 9, such as the squelch rules, these channels may tune to different frequencies for receive or transmit states (FF 8). As such, we agree with the Examiner (Ans. 11) that scanning communication resources in Figures 2A

and 2B involve switching among different radio frequencies associated with different channels.

Therefore, we conclude that the combination of Ando and Wiatrowski renders obvious the subject matter recited in claim 1, as well as claims 3 and 5-7, argued together with claim 1.

*Claims 2 and 9*

Regarding the combinability of the references, Appellant presents (App. Br. 19-23 and 36-40) similar arguments made with respect to claim 1, which were found to be unpersuasive. Additionally, Appellant contends (App. Br. 24 and 40-41) that Wiatrowski does not teach the claimed requirement of high-speed link for the first type of communication, while the second type of communication does not require high-speed link. Appellant asserts (*id.*) that the portion of Wiatrowski in Column 9, lines 31-44, which the Examiner relied on, relate to different channels having the same frequency.

The Examiner responds (Ans. 10-11) that the high-speed and low-speed links are applied to channels having different frequencies since Wiatrowski discloses in Column 3, lines 21-23 and 53-60, that different channels are disclosed to have different frequencies. We generally agree with the Examiner's findings and conclusion and further note that Wiatrowski also discloses the general method of scanning in Figure 5 where it is determined if the bandwidths of the channels having different frequencies are different. As such, while the Examiner is correct that the table in Column 9 shows different communication speeds applied to channels having different frequencies (Ans. 10-11), Figure 5 of Wiatrowski

(See FF 10) provides a more comprehensive scan method that clearly allows for different bandwidths for channels tuned to different frequencies.

Thus, based on the discussion above, we find that one of ordinary skill in the art would have found the subject matter of claims 2 and 9 obvious over the combination of Ando and Wiatrowski.

*Claims 4 and 11*

Similar to claim 1 discussed above, Appellant challenges (App. Br. 25-29 and 41-46) the propriety of the combination of Wiatrowski with Ando, which arguments we found unpersuasive. Appellant further argues (App. Br. 29-30 and 46-47) that the cited portion of Wiatrowski does not disclose switching the demodulation method when radio frequencies are switched, as recited in claim 4. Appellant asserts (*id.*) that the relied on portions of Wiatrowski discuss switching demodulation method for channels having the same frequency.

In response, the Examiner points out (Ans. 11) that the examples provided by Wiatrowski are indicated to be illustrative and not exhaustive of the possible channel configurations. We agree with the Examiner and find that, based on the discussion of assigning different frequencies to priority and non-priority channels (FF 3-5 and 8-9), Wiatrowski allows for using different modulation types for different channels tuned to different frequencies. As argued by the Examiner (Ans. 11), the channel configuration illustrated in the table of Column 9 is merely an example of differentiating among sixteen channels using two different frequencies, and not an exhaustive list of possible channel configurations (FF 9). Therefore, the disclosure of Wiatrowski, taken as a whole, suggests switching the

modulation method for scanning channels having different frequencies, as recited in claims 4 and 11.

Thus, based on the discussion above we conclude that one of ordinary skill in the art would have found the subject matter of claims 4 and 11 obvious over the combination of Ando and Wiatrowski.

*Claims 8, 10, 12, and 13*

Appellant challenges (App. Br. 30-36) the rejection of these claims based on the same features discussed above with respect to claim 1, which we found to be unpersuasive. In view of our analysis above, we conclude that the teachings of Ando and Wiatrowski, when considered as a whole, would have also suggested the subject matter of claims 8, 10, 12, and 13 to one of ordinary skill in the art.

## CONCLUSION

Based on the findings of facts and the analysis above, we conclude that the Examiner did not err in determining that combining Ando's roadside communication system with the frequency scanning method of Wiatrowski would have taught all the claimed elements and the combination would have been obvious to one of ordinary skill in the art.

## ORDER

The decision of the Examiner rejecting claims 1-13 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

## AFFIRMED

Appeal 2009-009124  
Application 09/921,714

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